

Summary of G896

Published Information

Part of the G896 sequence was first identified as an MSU EST (T45249). No published data is associated with G896. G896 encodes a member of the zinc finger family that is related to LSD-1

Mendel Discoveries

A knock-out mutant was isolated at Mendel, which contains a T-DNA insertion 40 base pairs downstream of the start codon. G896 knock-out plants are more susceptible to *Fusarium oxysporum*. In addition, G896 knockout plants have lower levels of lutein in seeds as compared to wild-type control plants (the data is in the process of being repeated). Otherwise, the knock-out plants have a wild-type morphological phenotype.

In wild-type plants, G896 is mostly expressed in roots. Changes in environmental conditions do not affect its expression. Given the disease and biochemical phenotypes of the knock-out plants, we would recommend overexpressing G896 and look for the opposite phenotypes in transgenic plants.

Closely Related Genes from Other Species

G896 is very similar to a peppermint EST (AW255156). Since the homology extends beyond the conserved domain, there is a chance the G896 and the mint gene are orthologues.

Utilities

Since G896 transgenic plants have an altered response to the fungal pathogen *Fusarium oxyporum*, the gene could be used to manipulate the defense response in order to generate pathogen-resistant plants.

References

Dietrich RA, Richberg MH, Schmidt R, Dean C, Dangl JL A novel zinc finger protein is encoded by the *Arabidopsis* LSD1 gene and functions as a negative regulator of plant cell death (1997) Cell 88(5):685-94

Keywords

Fusarium

Knockout Status

Homozygous KO plant identified

Collection Jack

Orientation 5LB

Insertion Point Gap 1

Insertion Point Offset in GenBank NID 62529 [33]1877523

Insertion Point ATG +258 ATG

Sequence

```
ACANGCACNATNTANGAAAACGANCTTTCATTTNATAATAACGCCGNGGACATNTACATT
NNNGANTTGAAAAAAATTGAGCTTTACTCTTTCTTTTCATCGCATATTGACCACATTA
CTCCATGCTGATCCATGTNCGCTTTCCCGNACATGAAGCCATTTACACACTCAATATAT
CCTGCCANAGATCACGGCCCTCTTCTGCCATGTTCCGGGAGAGGCAGCTGACCGGCAGGC
GCGTGGATATGCATAGACGCTGATGGGACGCTGGAAGGTTGCTGAGGAGGCGCGACGCGA
GTGTAGCTGATATGAGTAACAGCATGTATTAGATCGCCTCTATTAGATCC
```

Scientist Bob Creelman

Contact Information Phone: (510) 264-0280 x109 Fax: (510) 264-0254

Email: rcreelm@mendelbio.com

Sequence of G896

```
[33]TBLASTX versus GenBank non-Arabidopsis plant DNA
AW255156 1.0e-79 [Mentha x piperita] ML1467 peppermint glandular trichome Men
AI727328 1.2e-73 [Gossypium hirsutum] BNLGH17759 Six-day Cotton fiber Gossypi
AW030182 2.6e-58 [Lycopersicon esculentum] EST273437 tomato callus, TAMU Lyco
AI725072 6.4e-43 [Pinus taeda] 971 PtIFG2 Pinus taeda cDNA clone 8893r, mRNA
AI164649 1.4e-21 [Populus tremula x Populus tremuloides] A066P47U Hybrid aspe
AQ509367 5.2e-20 [Oryza sativa] nbxb0096I11r CUGI Rice BAC Library Oryza sati
AW349014 3.8e-11 [Glycine max] GM210003B22A9R Gm-r1021 Glycine max cDNA 3', m
AF098458 3.4e-9 [Hevea brasiliensis] latex-abundant protein (LAR) mRNA, comp
AI026282 0.023000 [Mesembryanthemum crystallinum] L0-494T3 Ice plant Lambda Un
AI881398 0.042000 [Zea mays] 606067E08.y1 606 - Ear tissue cDNA library from S
```

```

[34]BLASTX versus GenBank non-Arabidopsis plant peptide sequences
gi4235430 1.3e-12 [Hevea brasiliensis] latex-abundant protein.
gi100216 0.005900 [Lycopersicon esculentum] extensin class II (clone uJ-2)

gi21992 0.033000 [Volvox carteri] extensin.
gi790473 0.047000 [Nicotiana tabacum] soluble, glycine rich protein.
gi22550 0.230000 [Zea mays] 27kDa storage protein, zein.
gi530876 0.280000 [Chlamydomonas reinhardtii] amino acid feature: Rod protei
gi871498 0.290000 [Oryza sativa] DNA binding protein.
gi1903264 0.380000 [Pisum sativum] hypothetical protein.
gi671656 0.480000 [Sorghum bicolor] gamma-kafirin preprotein.
gi4584086 0.530000 [Spermatopsis similis] p210 protein.

```

DNA sequence used for BLAST

>G896 (gf=45) (nid=1877523,62271,63814) (acc=U89959) 1877523 gi|1877523|gb|U
ATGTACCCGCCACCTCCCTCAAGCATCTACGCTCCTCCGATGCTGGTGAATGTCTCCGGT
TGCCGGACGCCTCTCCAGCTCCCATCCGGCGCCCGATCTATTGCGTCGCTCTCTCGCCAG
GCTGTTACTCATATCGCCGACCTCCGCACCGCCCCCTCTCCGCAACCTTCTCTCGCCCTT
TCTCCGCCTCCCCAAATCCACGCGCCTCCCGGTACAGTGCCTCACCCCCATGGCAGGAAG
AGGGCCGTGATCTGTGGCATCTCGTATCGTTTCTCTCGCCACGAGCTCAAAGGCTGCATC
AACGACGCCAAGTGCATCGCTACCTTCTCATCAACAAATCAAATCTCCCCAGATTCA
ATTCTCATGTCTACCGTACAGAGTATTTCTATCTTTCAAATGCCTATGTTTGCTACTA
TACTACTATTCCTTGGATTTTGAATACAATTTTCTTGGCCTCTTCAATCTGATAAACAC
ACATTCCAAGTTACCATTTTGAACCACTTTGATAAAAAATGTGTGCATTCCATAGCTGAC
TAACATAATTTTCATCATGGATGGTTTTCATTCTCAGAGGAAGAACCTGATCCATATCTG
ATCCCGACCTCAAGCAAAACATGAGGATGGCATTGTATTGGCTCGTACAGGGATGCACAGCA
GGCGACTCACTTGTCTTCCACTACTCTGGTCATGGTTCGCGTCAAAGAACTACAACGGT
GATGAAGTTGATGGCTATGATGAACACTCTGTCTCTGGATTTTGAAACTCAGGGGATG
ATTGTAGACTGAGATCAACGCAACCAATGTACGCCCTCTTCCACATGGTGTCAAGCTC
CATTCAATTATTCGATGCTTGCCATAGTGGTACCGTCTCTGGATTACCCTTCTATGCAGA
ATGAACAGGTTATTAGTCCCTCAACCGCTTCTAAAAGGGATGTTGCTTACCTCTCTCGTT
ATATTTAACATACATCATTTTCTTTTAAATGAAACAGAGCTGGGCAGTATGTGTGGG
AGGATCATCGGCCTAGGTAGGTTGTGGAAAGGAAGTCTGGTGGAAGGCCATTTCAA
TTAGTGGATGTGATGATGATCAGACTTCGGCCGACACATCAGTAAGTGAACGACTCTAA
TCATACGTCTTGCTGTTGTAGTTGGTTCCTCTCATGATTAACACCATACACAGCGC
CTGTGCAAGATCAGCTCTACGGGTGCTATGACTTTCTGTTTATTCAAGCAATTGAACG
ACGCGCAAGGCAACAACCTTATGGAAGCCCTCTGAATTTCTAGCGCACCAATAAGGAAT
ACAGGGAATGATGGTGGTGGTGTAGTGGTGGAGTTGTGACGACTGTGCTGAGCATGCTTCTG
ACAGGGGGAGTGCAGATTGGGGGATTAAAGACAGGTAAAAATCTTTCTTGCTCTCTGTGT
TGATACAGATCGATAAATGTTTCTTAAATCTGTTTTCACAGGAGCCTCAACTGACTG
CTTGCCAAACACTCGATGCTCATGCAAAAGCCTTCTACTCTTAG

Amino Acid Sequence

>G896 Amino Acid Sequence
MYPPPPSSIIYAPMLVNCSGCRTPVLQLPSGARIRCALCQAVTHIADPRTPAPPQPPSSAP
SPPPPIHAPPQPLPHPHGRKVARICGISYFRSRHELKGCINDAKMRHLLINKFKFSPDS
ILMLTTEETDPYRIPTKQNMRAILYWLVGCTAGDSL VFHYSHGSRQNYNGDEVGDYD
ETLCPLDFETQGMIVDDEINATIVRPLPHGVKLHSIIDACHSGTVLDLPFLCRMNRAGQY
VVEDHPRPSGLWKGTAGGEAISTSGCDDQTSADTSALSKITSTGAMTFFCFQAIERSAQ
GTTYGSLNLSMRMTTIRNTGNDGGSGGVVTTVLSMLLTGSSAIGGLRQEPQLTACQTFDV
YAKPFTL*

_cDNA Sequence _

>G896 cDNA Sequence
TAAATCCGATTTCGTCTTCACTGATTCCCTCCCTTCCGAGAATAAATGTACCGCCACC
TCCCTCAAGCATCATCGCTCTCCGATCTGCTGTGAATTGCTCCGGTTGCCGAGCGCTCT
CAGAGTCCCATCCGGCGCCCGATCTATTCTGCTGCGCTCTCTCGCAGGCTGTTACTCATAT
CGCGGACCTTCGACCGCCCTCTCCGCAACCTTCTCTCGCCCTTCTCGGCTCCCA
AATCCACGCGCTCCCGGTTCAGCTGCCTCAGCCCCATGGCAGGAAGAGGCGCTGATCTG
TGGCATCTCGTATCGTTTCTCTCGCCACGAGCTCAAGGCTGCATCAACGACGCCAAGT
CATCGGTCACTTCTCATCAACAAATCAAATTCTCCCGAGTTCAATTCTCATGCTTAC

Sequence of G896

CGAGGAAGAACTGATCCATATCGTATCCCGACCAAGCAAAACATGAGGATGGCATTGTA
TTGGCTCGTACAGGGATGCACAGCAGGCGACTCACTTGTCTCCACTACTCTGGTCATGG
TTCGCGTCAAAGAACTACAACGGTGATGAAGTTGATGGCTATGATGAAACACTCTGTCC
TCTGGATTTTGAAACTCAGGGGATGATTGTAGACGATGAGATCAAACGCAACCATTGTACG
CCCTCTTCCACATGGTGTCAAGCTCCATTCAATTATCGATGCTTGCCATAGTGGTACCGT
TCTGGATTTACCTTCCTATGCAGAAATGAACAGAGCTGGGCAGTATGTGTGGGAGGATCA
TCGGCTAGGTGAGTTTGTGGAAAGGAAGTGGTGGGAGGCCATTTCATTAGTGG
ATGTGATGATGATCAGACTTCGGCCGACACATCAGCGCTGTGGAAGATCAGCTCTACGGG
TGCTATGACTTTCTGTTTTATTCAAGCAATTGAACGAGCGCACAAAGGCACAACCTATGG
AAGCCTTCTGAATTCTATGCGCACCACAATAAGGAATACAGGGAATGATGGTGGTGGTAG
TGGTGGAGTTGTGACGACTGTGCTGAGCATGCTTCTGACAGGGGGAAGTGGGATTGGGGG
ATTAAGACAGGAGCCTCAACTGACTGCTTGCCAAACATTGATGTCTATGCAAAGCCTTT
CACTCTCTAGTAAAGGACAAAGTCACTTTTATGTATAGCGAGTGTGATTTGAGAATCCGT
CCATATAACCACCTTTTGTCTTATTTTATTTTCTTTCAAAGAATAAAGGAAAACA
TTGATTTGGTGATTCTG

Genomic Sequence

>G896 Genomic Sequence

ATGTACCCGCCACCTCCCTCAAGCATCTACGCTCCTCCGATGCTGGTGAATTCCTCCGGT
TGCCGGACGCGCTCTCCAGCTTCGGCCGACACATCAGCGCTGTGGAAGATCAGCTCTGCCAG
GCTGTTACTCATATCGCCGACCCTCGCACCAGCCCTCCTCCGCAACCTTCCTCCGCCCT
TCTCCGCTCCCAAAATCCACGCGCTCCCGGTGAGTGCCTCACCCTTGGCAGGAAG
AGGGCCGTGATCTGTGGCATCTCGTATCGTTTCTCTGCCACGAGCTCAAAGGCTGCATC
AACGAGCCCAAGTGCATGCGTCACTTCTCATCAACAAATTCAAATTCTCCCGAGATTCA
ATTCTCATGCTTACCGGTACAGAGTATTTCTATCTTTCAAATGCCTATGTTGCTACTA
TACTACTATTCCTTGGATTTTGAATACAATTTCTTGGCTCTTCAATCTGATAAACAC
ACATTCCAAGTTACCATTTTGAACCACTTTGATAAAAAATGTTGTCATTCCATAGCTGAC
TAACTAATTGTTTCATCATGGATGGTTTTTCACTCTCAGAGGAAGAACTGATCCATATCGT
ATCCCGACCAAGCAAAACATGAGGATGGCATTGTATTGGCTCGTACAGGGATGCACAGCA
GGCGACTCACTTGTCTTCCACTACTCTGGTCATGGTTCGCGTCAAAGAACTACAACGGT
GATGAAGTTGATGGCTATGATGAAACACTCTGTCTCTGGATTTTGAAACTCAGGGGATG
ATTGTAGACGATGAGATCAACGCAACCATTGTACGCCCTCTCCACATGGTGTCAAGCTC
CATTCAAATTATCGATGCTTGCCATAGTGGTACCGTTCTGGATTTACCTTCCTATGCAGA
ATGAACAGGTTATTAGTCCCTCAACCGCTCTAAAGGGATGTTGCTTACCTCTCTCGTT
ATATTTAACATACATCCATTTTTTTTTTAATTGAAACAGAGCTGGGCAGTATGTGTGGG
AGGATCATCGGCTAGGTGAGTTTGTGGAAAGGAAGTGGTGGGAGGCCATTTCAA
TTAGTGGATGTGATGATGATCAGACTTCGGCCGACACATCAGTAAGTAGAACGACTCTAA
TCATACGCTCTGTGTTGTAGTTGGTTCTCTCTCATGATTAAACACATACACAGGCG
CTGTGCAAGATCAGCTCTACGGGTGCTATGACTTCTGTTTTATTCAAGCAATTGAACGC
AGCGCACAAAGGCACAACCTATGGAAGCCTTCTGAATTCTATGCGCACCACAATAAGGAAT
ACAGGGAATGATGGTGGTGGTAGTGGTGGAGTTGTGACGACTGTGCTGAGCATGCTTCTG
ACAGGGGGAAGTGGGATTGGGGGATTAAGACAGGTAAAAATCTTTCTTGTCTCTTGTGT
TGATACAGATCGATAAATGTTTCTTAAATCTGTTTTTGTACAGGAGCCTCAACTGACTG
CTTGCCAAACATTGATGTCTATGCAAAGCCTTTCACTCTCTAG
